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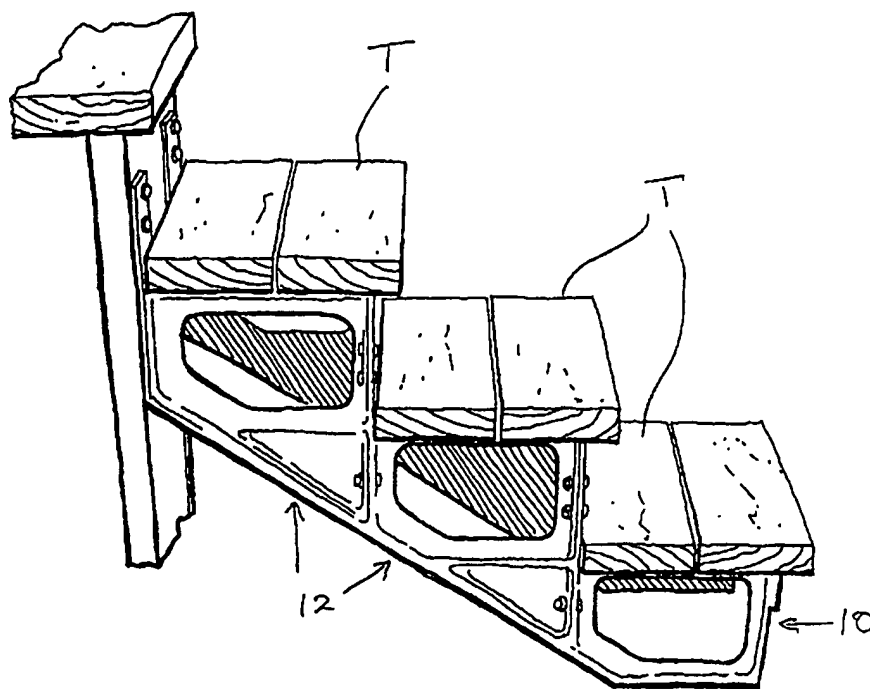
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(54) Title: STAIR BRACKET



(57) Abrégé/Abstract:

A stair bracket system, having a plurality of modular brackets, which can be assembled together to fabricate the risers for a flight of stairs, each of the brackets having a bottom edge, front and back end edges, a top edge, and, an attachment flange extending upwardly above said top edge.

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ABSTRACT OF THE DISCLOSURE

A stair bracket system, having a plurality of modular brackets , which can be assembled together to fabricate the risers for a flight of stairs, each of the brackets having a bottom edge, front and back end edges, a top edge, and, an attachment flange extending upwardly above said top edge.

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## FIELD OF THE INVENTION

The invention relates to a prefabricated modular bracket system for assembling risers for stairs, and in particular to a bracket of a unique design suitable for modular construction, using the same brackets, coupled together in sequence, to assemble a riser of the length required for a particular flight of stairs.

## BACKGROUND OF THE INVENTION

10 The construction of a flight of stairs in the past has usually involved cutting a pair of stair risers out of long pieces of lumber. Typically lumber 2" by 12" has been used. Right angular notches are cut into each riser at appropriate spacings. The two risers are then erected in place. The stair treads are then secured down in the notches. This usually involves nailing down through the stair tread into the risers. Nail heads are thus exposed on each stair tread. The securing of nails into the risers is often unsatisfactory, since the nails are driven in into the end grain. Nails driven in this way are known to be prone to work loose, and the stair treads themselves may become insecure. Cutting the lumber requires great care and skill. In many cases they are cut, on a custom basis, by the lumber yard itself. The two risers, often of considerable length, must then be carried to the building site. This is time consuming and can be a cause of delays at the site.

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Wooden risers are also known to deteriorate over time, especially when used for exterior stairs. Often it is necessary to support them or reinforce them in some

way. Clearly it desirable to provide risers which are free of rot , and which can be assembled on site as required, leaving the builder free of the restrictions imposed by , for example, purchasing them on a custom order basis from a lumber yard, which may be at some distance from the site.

#### BRIEF SUMMARY OF THE INVENTION

The invention seeks to provide a solution to these problems by providing a stair bracket system, having a plurality of brackets , which can be fitted together and assembled to fabricate the risers for a flight of stairs, at the building site itself.

10 Preferably the brackets will identical to each other, so that the builder can simply buy a quantity of brackets, without having to select various different components. This will also reduce the cost of manufacture.

In a preferred case the two brackets which form the base of the riser will be modified slightly on site so that they may lie on a floor or the ground, And remaining brackets will be of the same design but will not require the minor modification required for the two base brackets, and will all be identical to each other.

Preferably the brackets will incorporate junction flanges overlapping portions of an adjacent bracket, for receiving fastenings.

20 In this case each intermediate bracket will also preferably incorporate a notch shaped to receive the flange, so as to provide a smooth finished exterior appearance.

Preferably the design of the brackets will be such that they are suitable for manufacture by simple molding techniques so as to achieve maximum strength and rigidity, using long lasting materials. In a preferred case the same mold is used for all brackets, and they will be molded from reinforced plastics materials. Preferably the stair treads will be of wood, although the invention does not exclude the use of treads formed of other materials. Where wooden treads are used they can be secured to the risers from below, for example by screws, if desired.

10 The various features of novelty which characterize the invention are pointed out with more particularity in the claims annexed to and forming a part of this disclosure. For a better understanding of the invention, its operating advantages and specific objects attained by its use, reference should be had to the accompanying drawings and descriptive matter in which there are illustrated and described preferred embodiments of the invention.

#### IN THE DRAWINGS

Figure 1 is a perspective illustration of a short flight of stairs, constructed using modular stair brackets illustrating the invention;

20 Figure 2 is a side elevation of a base bracket and two connecting brackets, shown in exploded form, prior to assembly, and showing in phantom a portion of the base brackets having been removed;

Figure 3 is a side elevation in exploded form corresponding to Fig 2 but showing two brackets according to an alternate embodiment; and, Figure 4 is a side elevation of one of the brackets for Fig 3.

#### DESCRIPTION OF A SPECIFIC EMBODIMENT

As already described above the invention provides a stair bracket system providing modular molded brackets which can be coupled and fastened together to provide a pair of stair risers.

10 As shown in Figs 1 and 2, the invention is there illustrated as having a base bracket 10 and a series of identical intermediate brackets 12.

The reference to brackets 12 as being "intermediate" brackets is simply intended to differentiate these brackets from the base brackets. The intermediate brackets extend from the base brackets as far as the stair flight is required to reach.

in this embodiment of the invention there is in fact no separate design for a "base bracket", or for a "top" bracket, since all brackets are identical when made.

The base bracket is modified on site, so as to lie flat on a floor or the ground.

20 The top most intermediate bracket functions as the "top" of the stair flight, without modification, as will become apparent from the following description.

The invention does not however exclude the possibility of designing a special "base" bracket or a special "top" bracket, if such is felt to be desirable.

The base brackets 10 and intermediate brackets 12 , in this embodiment , are all identical when molded and supplied to the builder.

Each bracket 10 and 12 is formed with rectangular main body 14 having a bottom edge or rail 16. At each end of bottom edge or rail 16 there are respective upright end edges or rails, namely front end edge or rail 18 and back end edge or rail 20. Across the upper ends of end edges or edges or rails 18 and 20 there is formed a top edge or rail 22. Between end edge or rail 20 and bottom edge or rail 16 there is a short diagonal edge or rail junction 24.

10 Front end edge or rail 18 is formed with a notch 26 for reasons to be described below. An upwardly extending flat connecting flange 28 extends upwardly from the junction between back end edge or rail 20 and top edge or rail 22. Suitable fastening openings (not shown) are formed in front and back end edges or rails 18 and 20 and in flange 28. Suitable openings (not shown) are also formed in top edge or rail 22 for securing a stair tread shown as T. Any suitable fastenings may be used to secure tread T. Typically these may be screws (not shown) inserted upwardly through top edge or rail 22 into the underside of tread T. The invention is not restricted to fastening the treads in this way however. Any suitable fastenings may be used for the purpose.

20 Each of bottom edges or rails 16, end edges or rails 18 and 20 and top edge or rail 22 are preferably formed with a cross-section in the shape of a T, having a central web 30 and a flat cross plate 32 . This provides for great strength and

rigidity, and is suitable for forming out of material such as reinforced plastics material by suitable molding techniques.

Extending downwardly from bottom edge or rail 16 is a triangular gusset portion 34. Gusset portion 34 defines a front edge or rail 36 and an angled bottom edge or rail 38. Gusset portion 34 is formed integrally with bottom edge or rail 16 of main body 12.

Gusset portion 34 is also formed, in front edge or rail 36 with fastening openings (not shown) to receive bolts B or the like. While bolts are illustrated the invention is not restricted to the use of bolts but includes the use of any suitable fastenings.

10 Each of bottom edges or rails 38, front edges or rails 36 are preferably formed with a cross-section in the shape of a T, as described above. This provides for great strength and rigidity, and is suitable for forming by simple molding techniques.

In use, in the embodiment of Figs 1 and 2, the base bracket 10 of the riser is first formed by taking an intermediate bracket 12 and removing the gusset portion 34, as shown in phantom in Fig 2.

Brackets 10, and 12 are fastened together by placing the flange 28 bracket 10 in notch 26 of intermediate bracket 12. Fastenings are then passed through the openings and the two brackets are thus secured to each other. The flange 28 of  
20 the intermediate bracket 12 is placed in the notch 26 of the next adjacent bracket 12. Fastenings are passed through the openings in gusset front edge or rail 36 and the back end edge or rail 20 of the next adjacent bracket 12.



Fastenings are passed through the openings in gusset front edge or rail 36 and the back end edge or rail 20 of the next adjacent bracket 12.

Fastening are also passed through openings in flange 28 and the front end edge 18 of the next adjacent bracket . The same steps are repeated until a sufficient number of brackets have been assembled and secured together .

The assembly of brackets is then placed in position where required. The topmost intermediate bracket 12 is secured to the building fabric by passing fastenings through openings in the back end edge or rail 20 and through flange 28 ,if desired, and securing them in the building fabric.

10 A second riser formed of an assembly of brackets 10 and 12 is then placed in position alongside and spaced from the first such bracket assembly, and is secured in position. If desired the base brackets 10 can also be secured, if there is anything suitable to which this portion can be fastened.

Treads can then be laid on the top edges or rails 22, and fastened by any suitable means.

It will be appreciated that while the invention has been illustrated here as having "rails", which define and enclose a hollow area there between, this is merely one form of construction, which happens to be both convenient and economical.

20 The rails could equally well be simply the edges of a solid body, which might be thought to be desirable for some purposes.

Throughout this description therefor the phrase "edge or rail" is intended to cover all possible variations in design and construction, and is without limitation.

Referring now to Figs 3 and 4, and alternate embodiment of bracket is shown, which has certain features providing for ease of assembly.

Thus a bracket 50 comprises a rectangular main body 52, and a triangular gusset portion 54. Body 50 defines a circular open space, and a bottom rail 56, front and back end rails 58 and 60 and a top rail 62. Gusset portion 54 is formed integrally with bottom rail 56 and defines a front edge 64 and a diagonal bottom edge 66. A flange 68 extends upwardly from back rail 60 of main body 52. Front edge 64 of gusset portion 54 defines a notch 70. At the lower end of back rail 60 a downwardly directed hook 72 is formed. At the bottom of front edge 64 an upwardly directed hook 74 is formed. A boss 76 is formed on front edge 64, and a mating female recess 78 (not shown) is formed in back end rail 60 .

10      Suitable openings are formed in back end rail 60, front edge 64 and top rail 62 to receive fastenings such as bolts, and screws , as in Fig 1 and 2.

In use brackets 50 can be interlocked with one another by interengaging the hooks 72 and 74, and the recess 78 with boss 76. Bolts (not shown) can then be inserted through suitable openings to secure the brackets together.

One pair of brackets can be modified on site by removing the gusset portions 54, leaving the main body bottom rail 56 available to lie on a floor or the ground.

The treads T are attached as described above, with screws.

20      The foregoing is a description of a preferred embodiment of the invention which is given here by way of example only. The invention is not to be taken as limited to any of the specific features as described, but comprehends all such variations thereof as come within the scope of the appended claims.

**THE EMBODIMENTS OF THE INVENTION IN WHICH AN EXCLUSIVE  
PROPERTY OR PRIVILEGE IS CLAIMED ARE DEFINED AS FOLLOWS:**

1.. A stair bracket system, having a plurality of modular brackets , which can be assembled together to fabricate the risers for a flight of stairs, and comprising:  
a plurality of brackets and each in turn having,  
a bottom edge;  
front and back end edges;  
a top edge; and,  
openings for receiving fastenings for securing said brackets together .

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2 A stair bracket system as claimed in claim 1, and including an attachment flange extending upwardly above said top edge.

3. A stair bracket system as claimed in claim 2 and wherein each said front end edge includes a notch shaped to receive a said flange.

4. A stair bracket system as claimed in claim 3 and wherein at least some of said brackets include a generally triangular gusset portion extending downwardly from said bottom edge.

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5. A stair bracket system as claimed in claim 4 and wherein each said

bracket includes a short diagonal junction portion extending between said bottom edge and said back end edge.

6. A stair bracket system as claimed in claim 5 wherein each said edge is formed of a generally T-shaped cross-section.

7. A stair bracket system as claimed in claim 1 wherein said bottom edge said end edges and said top edge and said diagonal edge enclose an open space

10 8. A stair bracket system as claimed in claim 4 wherein said gusset portions are removed from two of said brackets, whereby to permit said bottom edges of said brackets to lie on a surface, at a lower end of said assembly.

9. A stair bracket system as claimed in claim 1 wherein said brackets are molded from plastics material.

10. A stair bracket system as claimed in claim 4 wherein said back end edges are formed with downwardly directed hooks, and wherein said gusset portions are formed with front edges defining notches, and upwardly directed hooks at the  
20 lower ends of said notches.

11. A stair bracket system as claimed in claim 10 where in said back end edges are formed with recesses, and wherein said gusset portions are formed with front edges defining bosses to interfit with said recesses.

12. A stair bracket system as claimed in claim 10 wherein said main body defines a generally circular open space.

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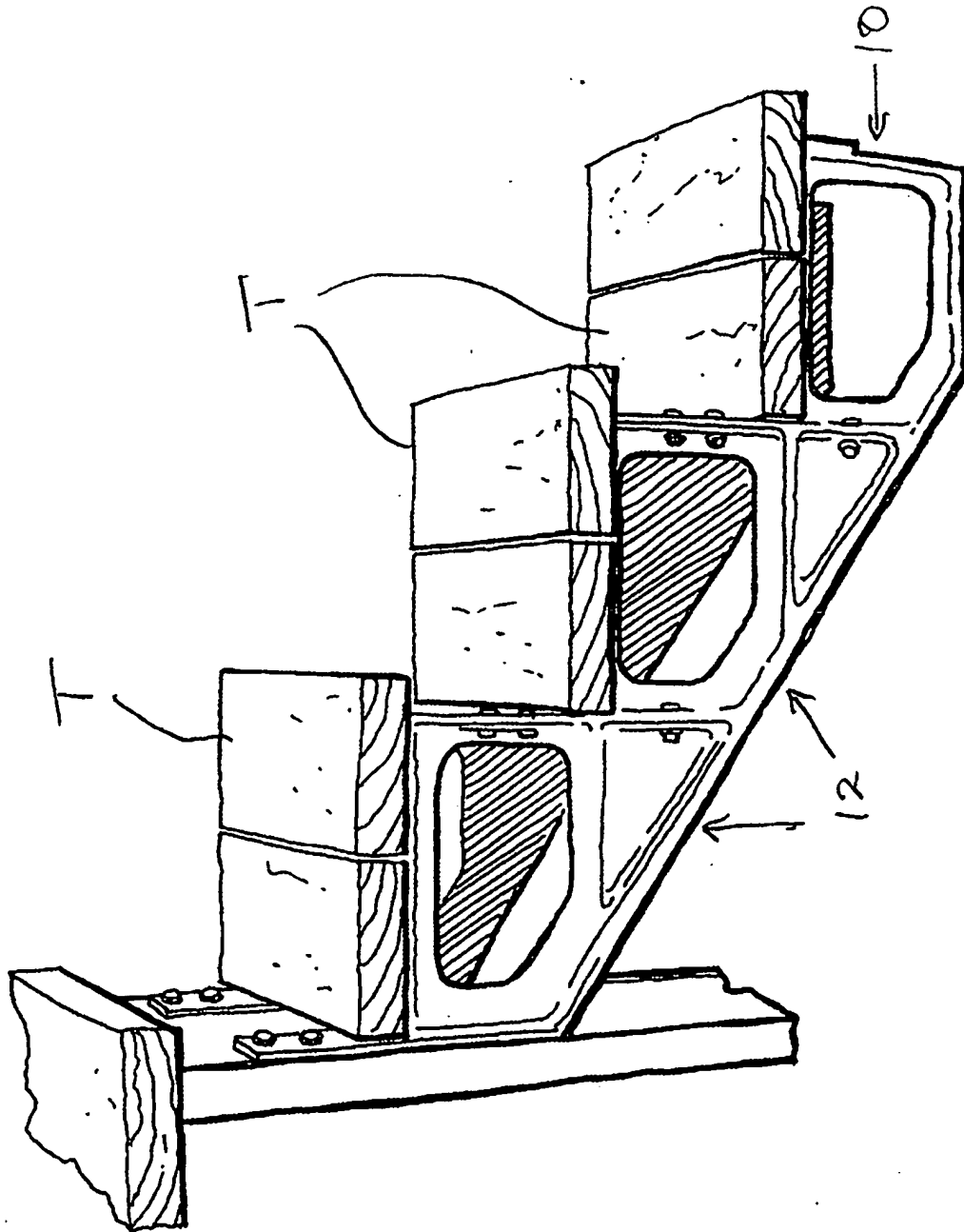


FIG. 1

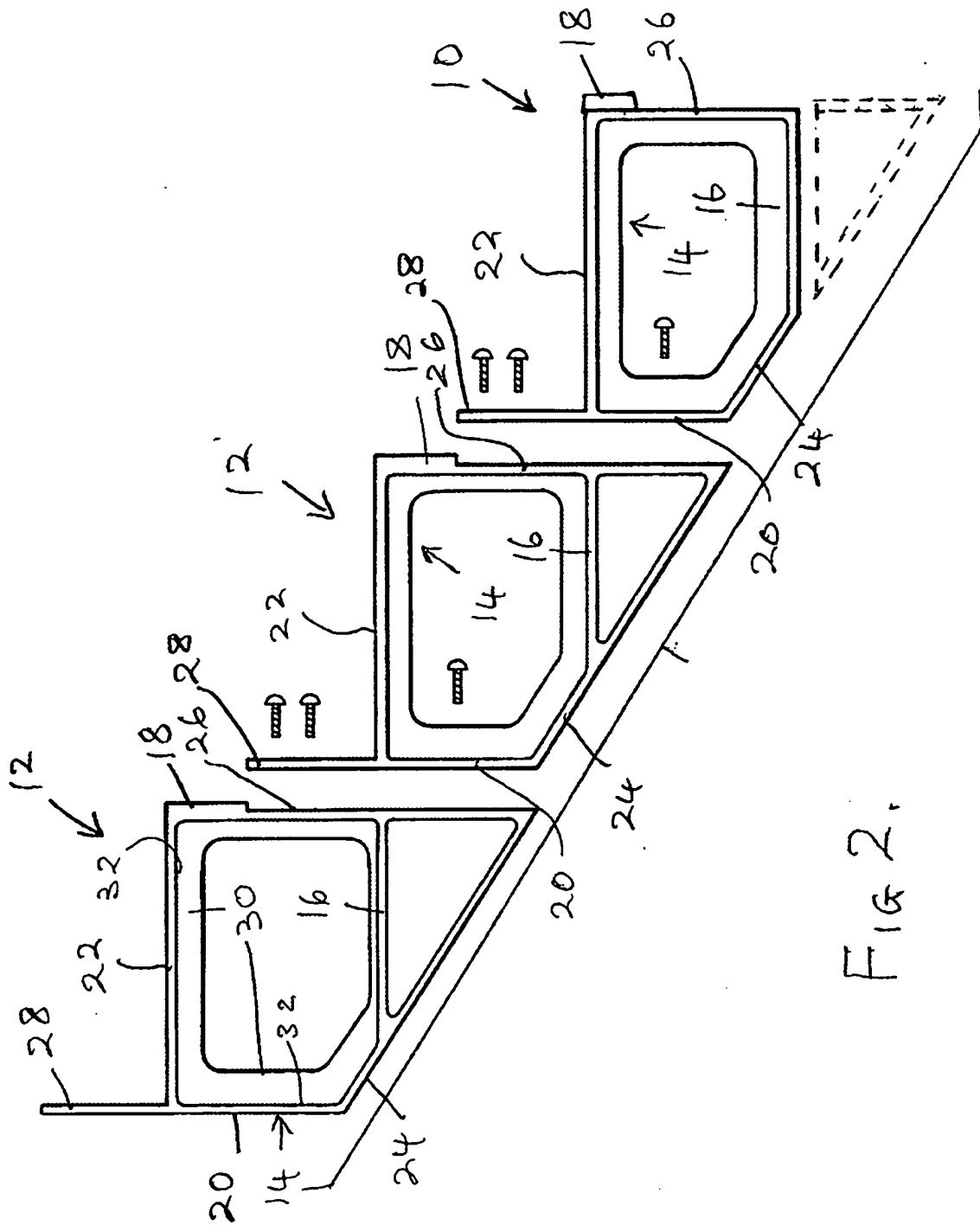


FIG 2.

